

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* LUC RAMBAUD

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Appeal 2008-3267  
Application 10/116,100  
Technology Center 2600

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Decided: November 17, 2008

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Before ROBERT E. NAPPI, SCOTT R. BOALICK, and JOHN A.  
JEFFERY, *Administrative Patent Judges*.

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DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 from the Examiner's rejection of claims 1-20. We have jurisdiction under 35 U.S.C. § 6(b), and we heard the appeal on October 21, 2008. We reverse.

## STATEMENT OF THE CASE

Appellant invented a communications system and method that employs frequency hopping. Specifically, a sequence of padding data is inserted between a series of data blocks that are transmitted at different carrier frequencies. As such, the padding data is transmitted while the frequency changes.<sup>1</sup> Claim 1 is illustrative:

1. A method of transmitting data in the form of a series of blocks, each block of data being subjected to a frequency conversion in order to be transmitted at a carrier frequency, comprising:

inserting a sequence of padding data between a first block of data intended to be transmitted at a first carrier frequency and a second block of data intended to be transmitted at a second carrier frequency; and

transmitting the padding data while the frequency changes from the first carrier frequency to the second carrier frequency.

The Examiner relies on the following prior art references to show unpatentability:

Deck	US 6,005,477	Dec. 21, 1999
Wakayama	US 6,130,905	Oct. 10, 2000
Taylor	US 6,172,927 B1	Jan. 9, 2001

1. Claims 1-4, 10, 11, 13, 14, and 19 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Wakayama and Deck (Ans. 3-6).
2. Claims 5-9, 12, 15-18, and 20 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Wakayama, Deck, and Taylor (Ans. 6-15).

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<sup>1</sup> See generally Spec. 2:1-8; Abstract.

Rather than repeat the arguments of Appellant or the Examiner, we refer to the Briefs and the Answer<sup>2</sup> for their respective details. In this decision, we have considered only those arguments actually made by Appellant. Arguments which Appellant could have made but did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Regarding the Examiner's obviousness rejection over Wakayama and Deck, the Examiner acknowledges that Wakayama's frequency hopping system includes intervals of time between frequency hops (that the Examiner characterizes as "guard intervals") where no data is sent. The Examiner takes the position that it would have been obvious to ordinarily skilled artisans to insert padding data in this interval in light of the teachings of Deck that is said to fill a guard interval with data in the form of a cyclic prefix (Ans. 15-18).

Regarding the independent claims, Appellant argues, among other things, that Wakayama teaches away from such a modification. Appellant emphasizes that Wakayama expressly indicates that communication is not possible during the "occupied time" (i.e., the interval that the Examiner characterizes as the "guard interval") and that the system must therefore wait until the frequency has stabilized for such communication. Further, Appellant argues, such a modification would change the principle of operation of Wakayama (App. Br. 7; Reply Br. 2-3).

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<sup>2</sup> Throughout this opinion, we refer to (1) the Appeal Brief filed August 9, 2007; (2) the Examiner's Answer mailed October 3, 2007; and (3) the Reply Brief filed December 3, 2007.

## ISSUE

The pivotal issue before us, then, is whether Appellant has shown that the Examiner erred in combining the teachings of Deck with Wakayama to arrive at the claimed invention. The issue turns on whether Wakayama teaches away from the Examiner's proposed modification of that reference.

## FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence:

### *Wakayama*

1. Wakayama discloses a bi-directional communication system between two communication devices 1a and 1b<sup>3</sup> employing a “frequency hopping” scheme. In this system, the frequency of the signals hops at a fixed time interval (the “holding time” T) which can be set by the user (Wakayama, col. 2, ll. 42-53; col. 4, l. 51 - col. 5, l. 67; Fig. 3).

2. A certain period of time (the “occupied time” t) is needed for the frequency-hopping signal to stabilize after the frequency hops; communication is not possible during this “occupied time” period t (Wakayama, col. 2, l. 65 - col. 3, l. 5; col. 5, ll. 1-5; Figs. 2, 3, 5).

3. Following a frequency hop (e.g., to frequency f1 in Fig. 5), Wakayama's system waits until after occupied time t elapses to create and transmit data from communication device 1a to communication device 1b. This data is sent during a time interval that corresponds to the holding time

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<sup>3</sup> Communication devices 1a, 1b have the same structure as that shown in Figure 3 (Wakayama, col. 7, ll. 14-25).

Ta less the occupied time t (i.e., the interval  $T_a - t$ ) (Wakayama, col. 7, l. 60 - col. 8, l. 28; Fig. 4a (Steps S101-S104); Fig. 5).

4. After this transmission, the frequency then hops to a new frequency (e.g.,  $f_2$  in Fig. 5) and waits until after the occupied time t elapses. Then, communication device 1a receives reception data from communication device 1b during an interval that corresponds to the holding time  $T_b$  less the occupied time t (i.e., the interval  $T_b - t$ ) (Wakayama, col. 8, ll. 28-59; Fig. 4a (Steps S107-S112); Fig. 5).

#### *Deck*

5. Deck discloses a system for transmitting data via a power supply network using a multicarrier modulation (MCM) method for information interchange that provides sufficiently interference-free results without any loss of speed (Deck, col. 2, l. 59 - col. 3, l. 8).

6. Introducing time guard intervals between transmitted individual symbols in Deck's system can eliminate distortion. These guard intervals may be filled by a "cyclic prefix" (i.e., the last part of a symbol is placed in front of the symbol as a prefix) (Deck, col. 4, ll. 39-44).

#### PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Discussing the question of obviousness of claimed subject matter involving a combination of known elements, *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), explains:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* [v. *AG Pro, Inc.*, 425 U.S. 273 (1976)] and *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969)] are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

*KSR*, 127 S. Ct. at 1740. If the claimed subject matter cannot be fairly characterized as involving the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement, a holding of obviousness can be based on a showing that “there was an apparent reason to combine the known elements in the fashion claimed.” *Id.* at 1740-41. Such a showing requires

some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

*Id.* at 1741 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

If the Examiner’s burden is met, the burden then shifts to the Appellant to overcome the prima facie case with argument and/or evidence.

Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

“A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Kahn*, 441 F.3d 977, 990 (Fed. Cir. 2006) (citations and internal quotation marks omitted).

## ANALYSIS

### *The Obviousness Rejection Over Wakayama and Deck*

Based on the functionality of Wakayama and Deck noted in the Findings of Fact section above, we will not sustain the Examiner’s obviousness rejection of the independent claims based on these references. We agree with Appellant (Reply Br. 2) that Wakayama teaches away from the Examiner’s proposed modification, namely inserting padding data in the occupied time interval *t*.

Independent claim 1 recites a method of transmitting data including the step of “transmitting the padding data while the frequency changes from the first carrier frequency to the second carrier frequency.” Thus, the scope of claim 1 expressly includes that data is transmitted while the carrier frequency is changing. Independent claims 11, 13, and 19 recite commensurate limitations pertaining to the transmission or reception of a sequence of padding data during frequency transitions.

Wakayama expressly states that a time interval (i.e., the “occupied time” *t*) is needed for the frequency-hopping signal to stabilize after the

frequency hops. Significantly, *communication is not possible* during this “occupied time” period  $t$  due to this instability (FF 2). It is for this reason that Wakayama deliberately *avoids* communicating during this period, namely by communicating data between the communication devices 1a and 1b solely in the intervals that exclude the “occupied time” period  $t$  (e.g., the intervals  $T_a - t$ ,  $T_b - t$ , etc.) (FF 3-4). This exclusion is graphically illustrated in Figure 5 of Wakayama reproduced below for clarity:

FIG. 5

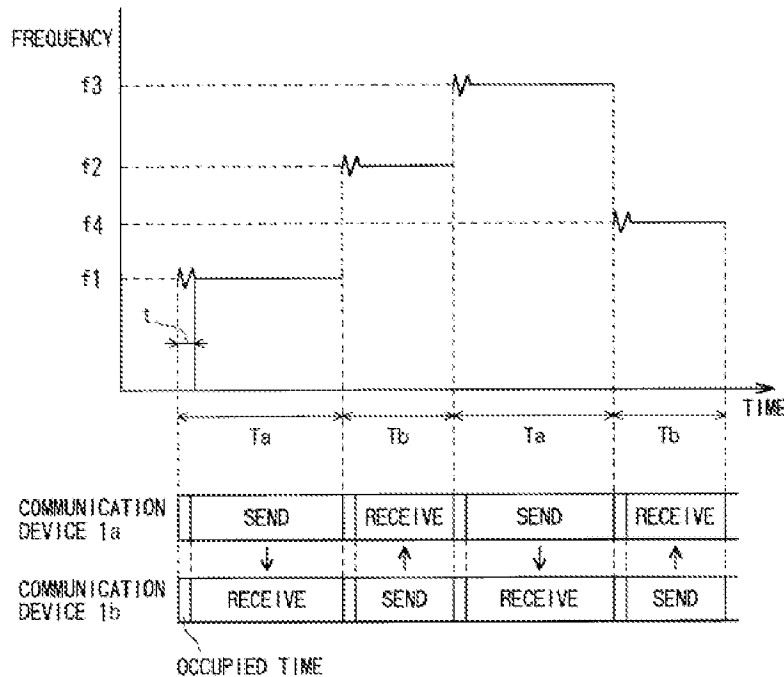


Figure 5 of Wakayama Illustrating Exclusion of Occupied Time Interval “t” for Data Communication Purposes

As such, we see no reason why ordinarily skilled artisans would include any data in the “occupied time” interval  $t$  in light of its inherent instability, let alone include a sequence of padding data as claimed. Simply



put, this interval is unsuitable for communication irrespective of whether it is characterized as an “occupied time” interval (Wakayama’s term), or as a “guard interval” (the Examiner’s term) (Ans. 15). Whatever the label used to characterize this interval, to include a sequence of padding data in this otherwise unsuitable interval as the Examiner proposes simply runs counter to the teachings of the reference.

The Examiner’s reliance on Deck is likewise unavailing. Deck does teach that guard intervals between individual symbols can eliminate distortion and that these guard intervals can be filled with a “cyclic prefix” (i.e., placing the last part of a symbol in front of the symbol to form a prefix) (FF 6). While Deck pertains to a data communication system, it has nothing to do with frequency hopping systems, let alone teach or suggest that this guard interval could be employed at the frequency transitions in a frequency hopping system (e.g., in a manner similar to the occupied time intervals in Wakayama).

While data communication in Deck can be improved by including a cyclic prefix in the guard interval of that particular power supply network transmission system, the Examiner has not shown—nor can we find—anything on this record that would indicate that such an improvement could be achieved by including this data in the occupied time interval *t* of Wakayama’s frequency hopping system. If anything, Wakayama actually suggests just the opposite: that such a modification would be unsuccessful in light of that interval’s inherent instability when the frequency changes.

For the foregoing reasons, Appellant has persuaded us of error in the Examiner’s rejection of independent claims 1, 11, 13, and 19 which recite limitations pertaining to the transmission or reception of a sequence of

padding data during frequency transitions. Accordingly, we will not sustain the Examiner's rejection of those claims, and dependent claims 2-4, 10, and 14 for similar reasons.

*The Obviousness Rejection Over Wakayama, Deck, and Taylor*

Regarding the obviousness rejection of dependent claims 5-9, 12, 15-18, and 20, since we find that the disclosure to Taylor does not cure the deficiencies noted above with respect to the independent claims, this obviousness rejection is also not sustained for the reasons noted above.

CONCLUSIONS OF LAW

Appellant has shown that the Examiner erred in rejecting (1) claims 1-4, 10, 11, 13, 14, and 19 over Wakayama and Deck, and (2) claims 5-9, 12, 15-18, and 20 over Wakayama, Deck, and Taylor under § 103.

ORDER

The Examiner's decision rejecting claims 1-20 is reversed.

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Application 10/116,100

REVERSED

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